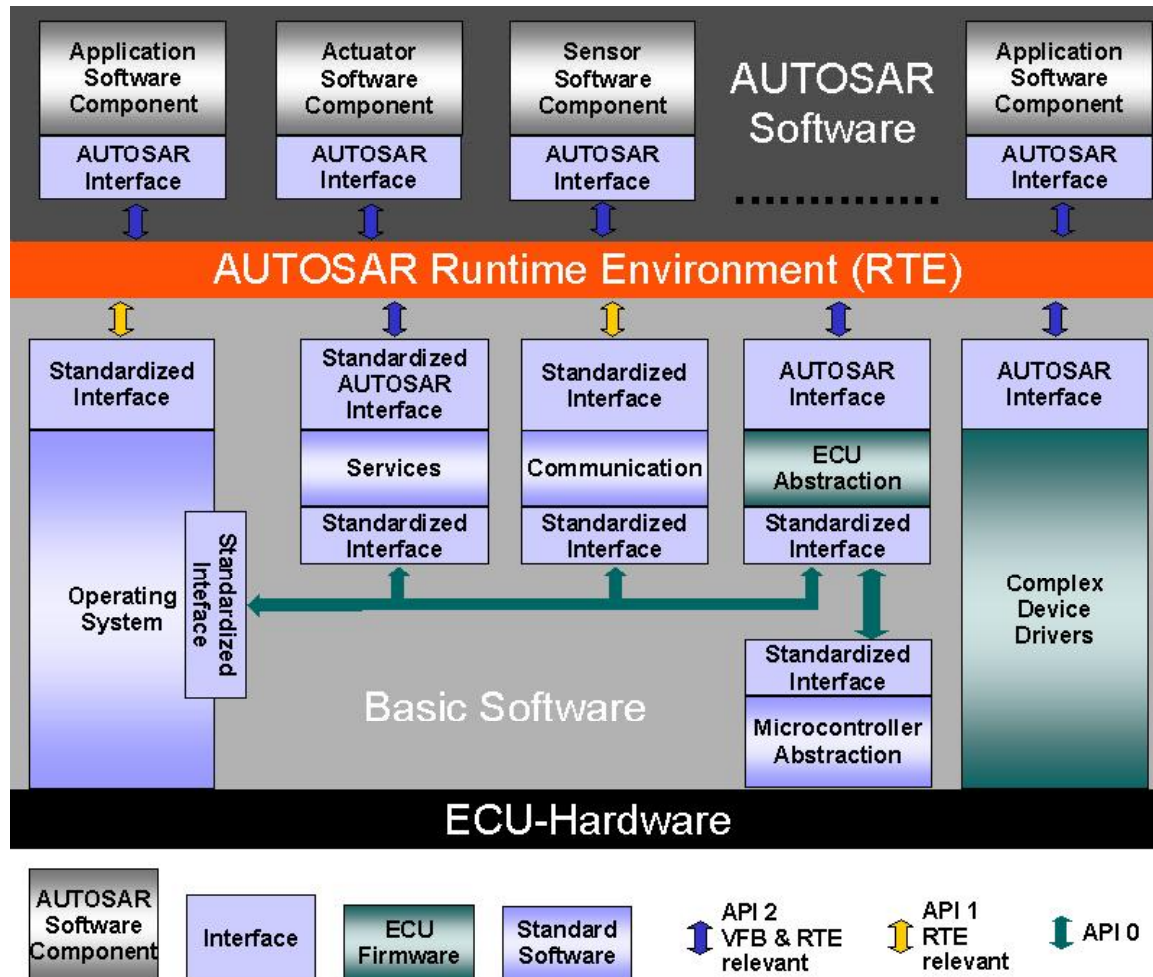


# Standardization



## AUTOSAR – ECU Software Architecture



### Automotive Open System Architecture (AUTOSAR):

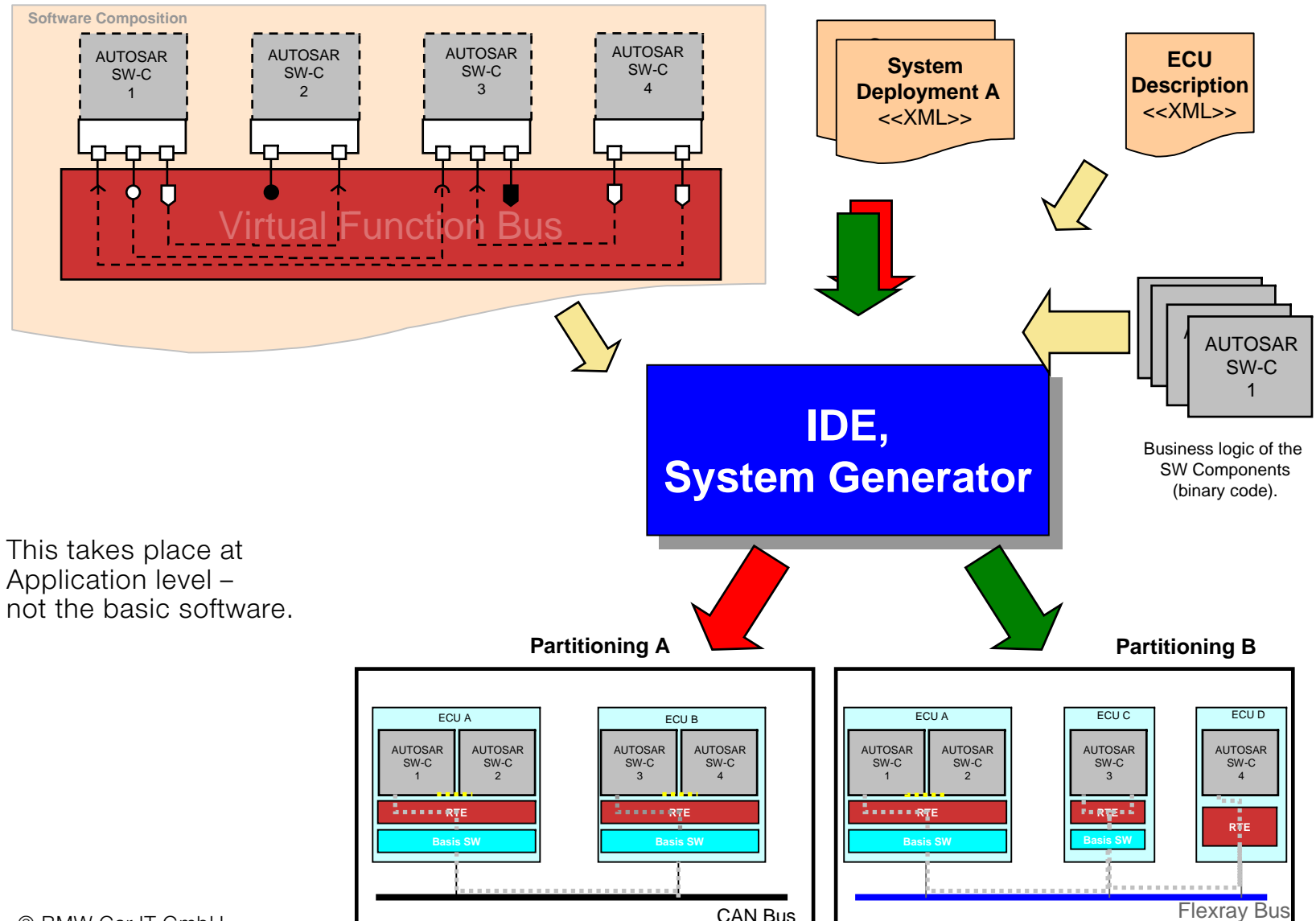
- Standardized, openly disclosed interfaces
- HW independent SW layer
- Transferability of functions
- Redundancy activation

### AUTOSAR RTE:

by specifying interfaces and their communication mechanisms, the applications are decoupled from the underlying HW and Basic SW, enabling the realization of Standard Library Functions.

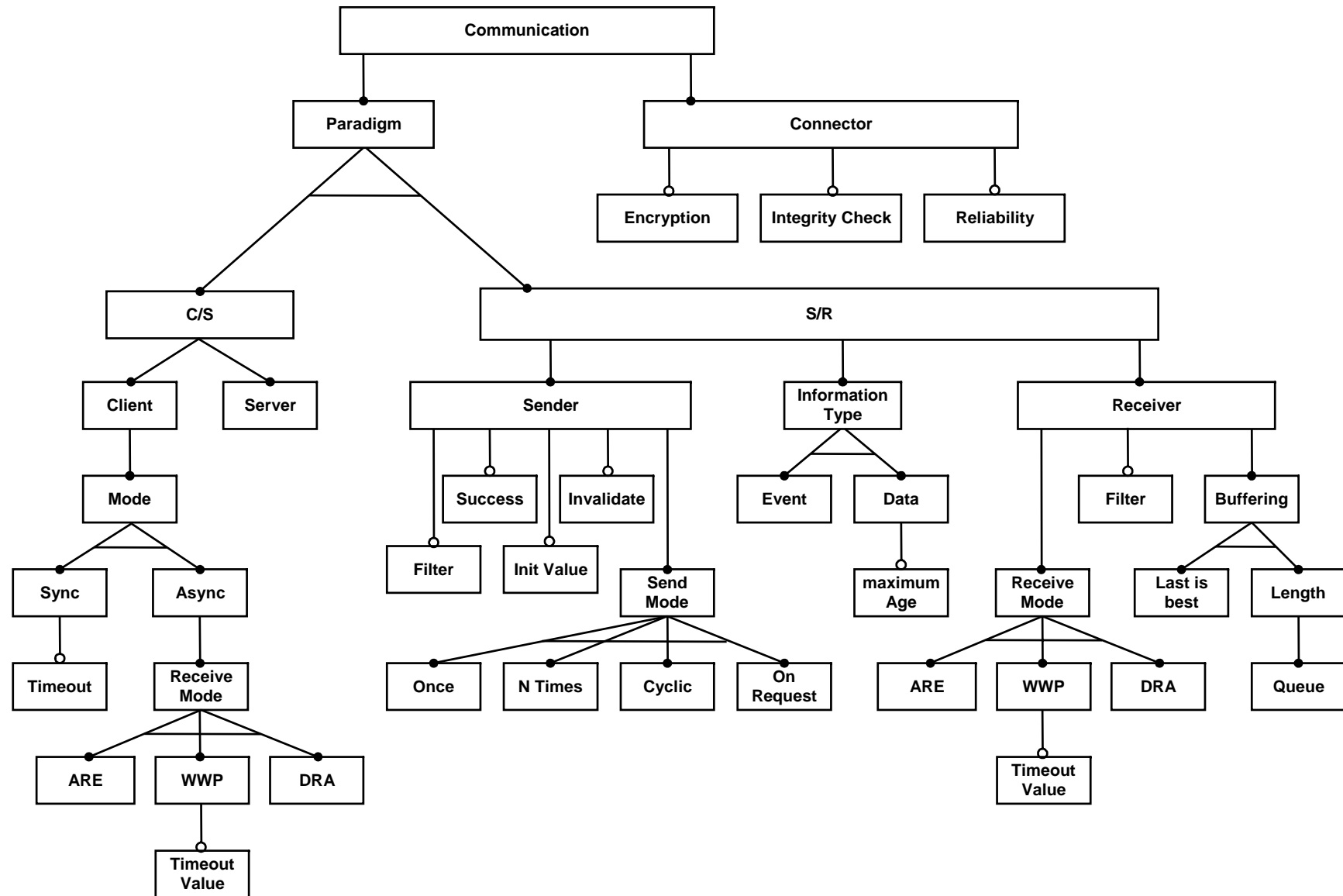
# AUTOSAR - First Experiences.

## Model based development under AUTOSAR.

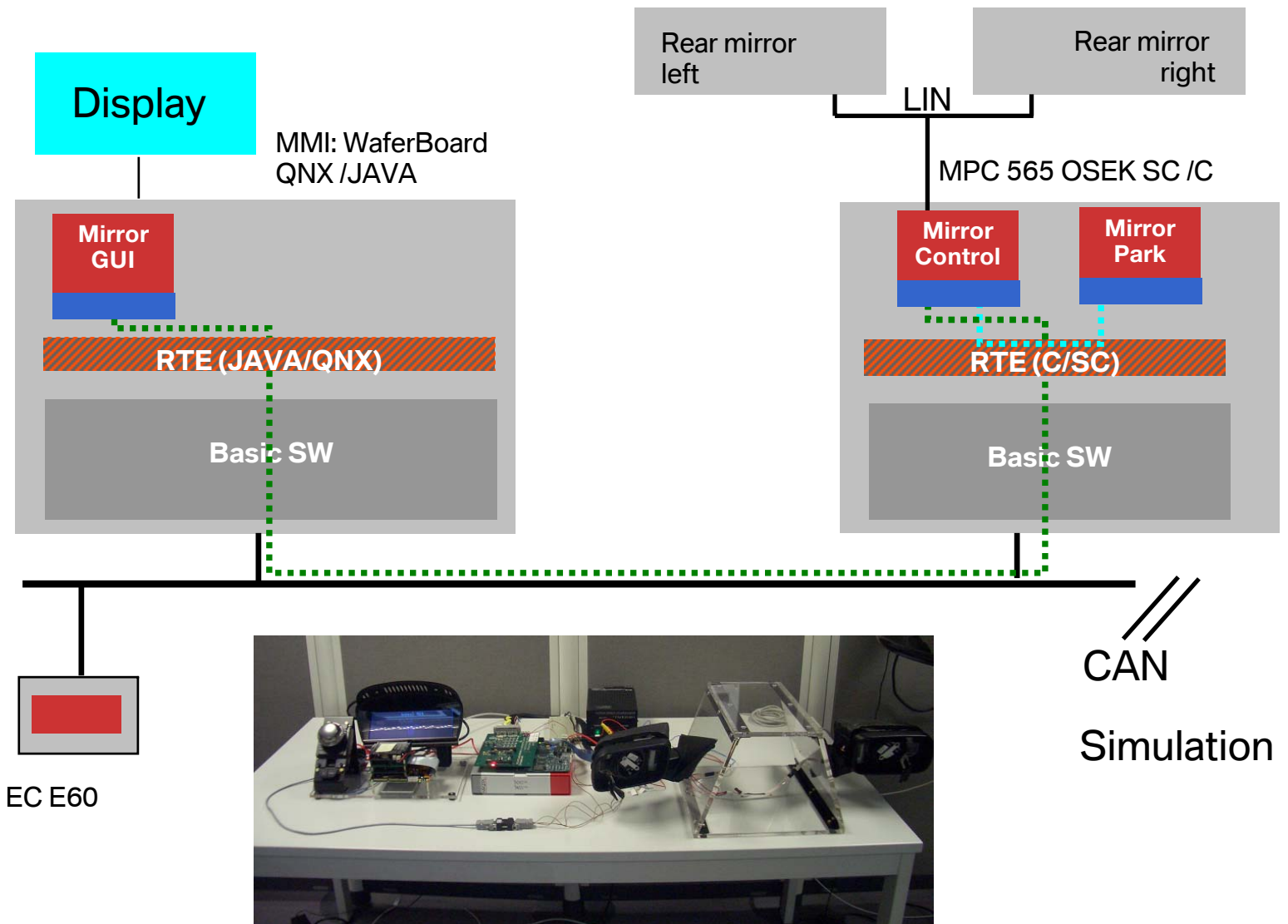


# AUTOSAR - First Experiences.

## A subset of the Virtual Function Bus.

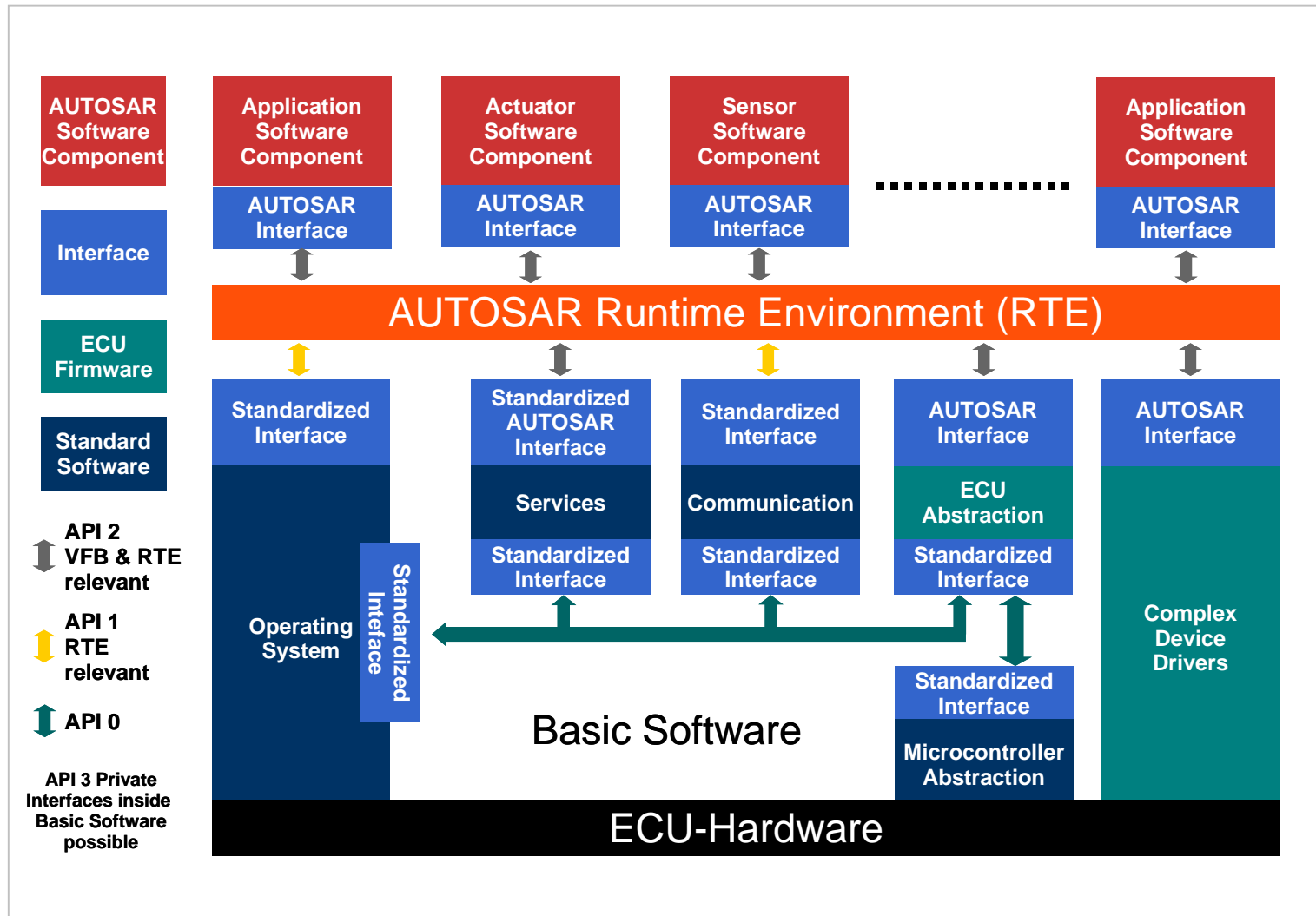


# AUTOSAR - First Experiences. „Proof of Concept“ (June 2004).



# AUTOSAR - First Experiences.

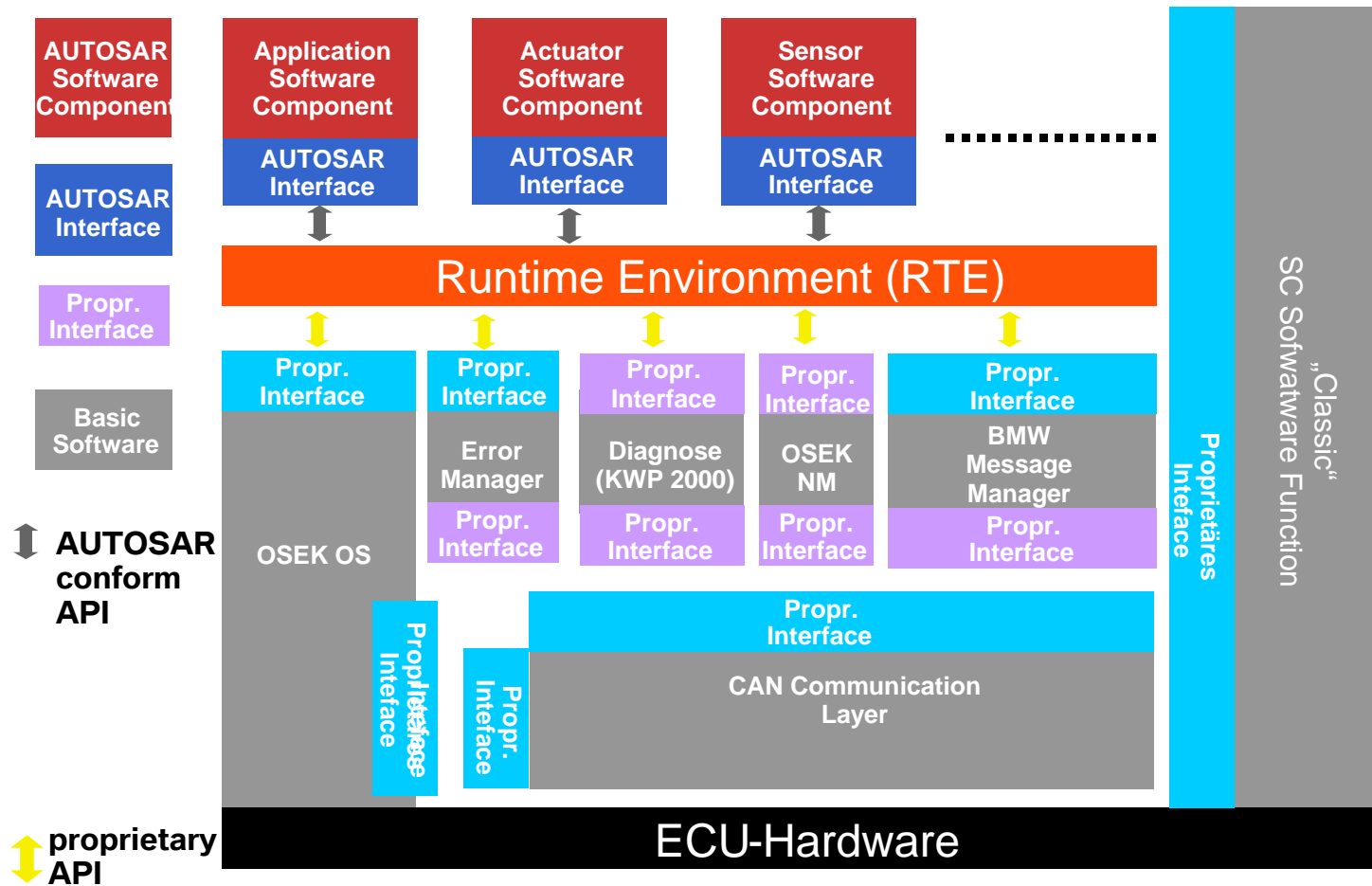
## AUTOSAR Architecture.



source: www.autosar.org

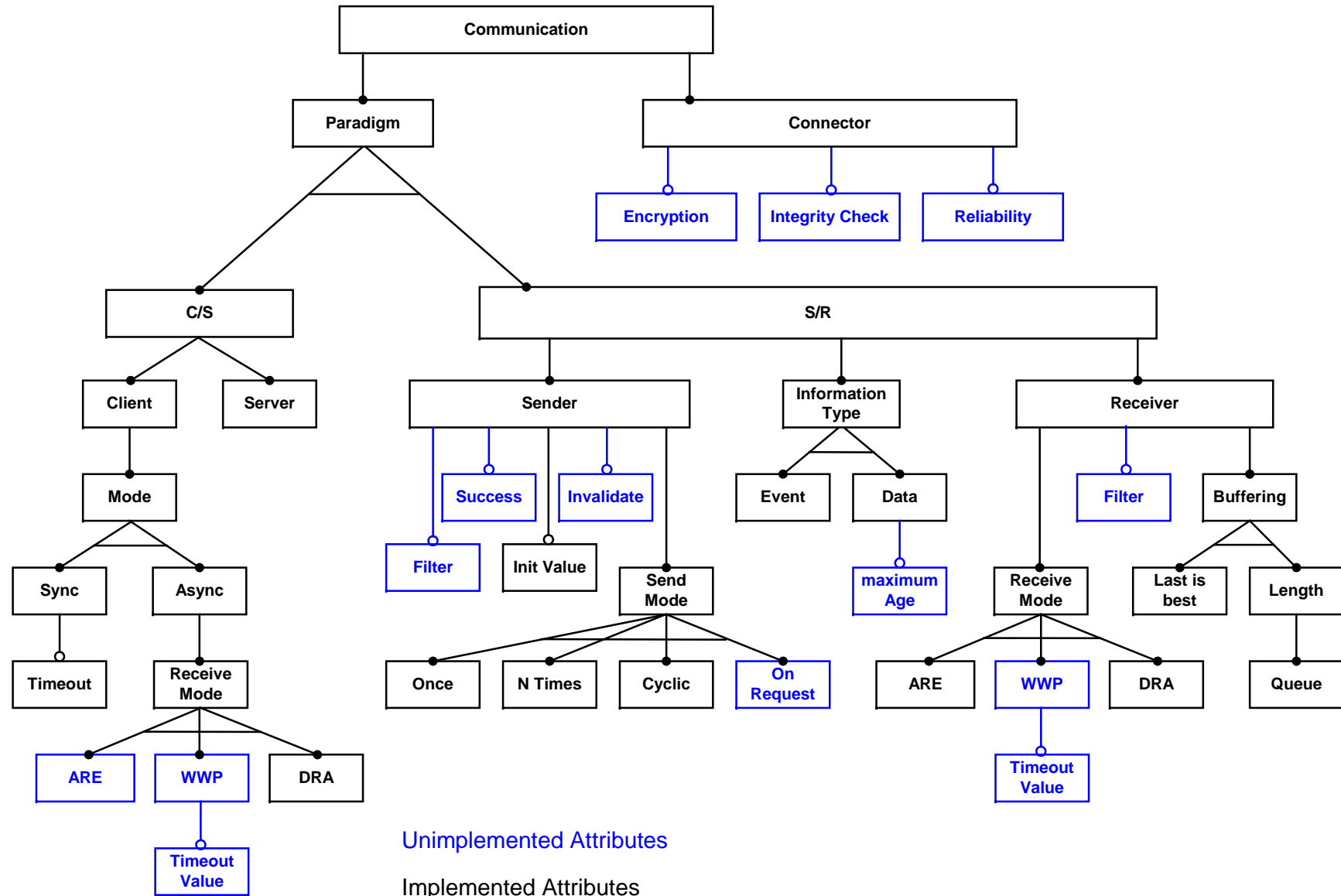
# AUTOSAR - First Experiences.

## Architecture of the BMW SC/RTE.



# AUTOSAR – Migration Strategy.

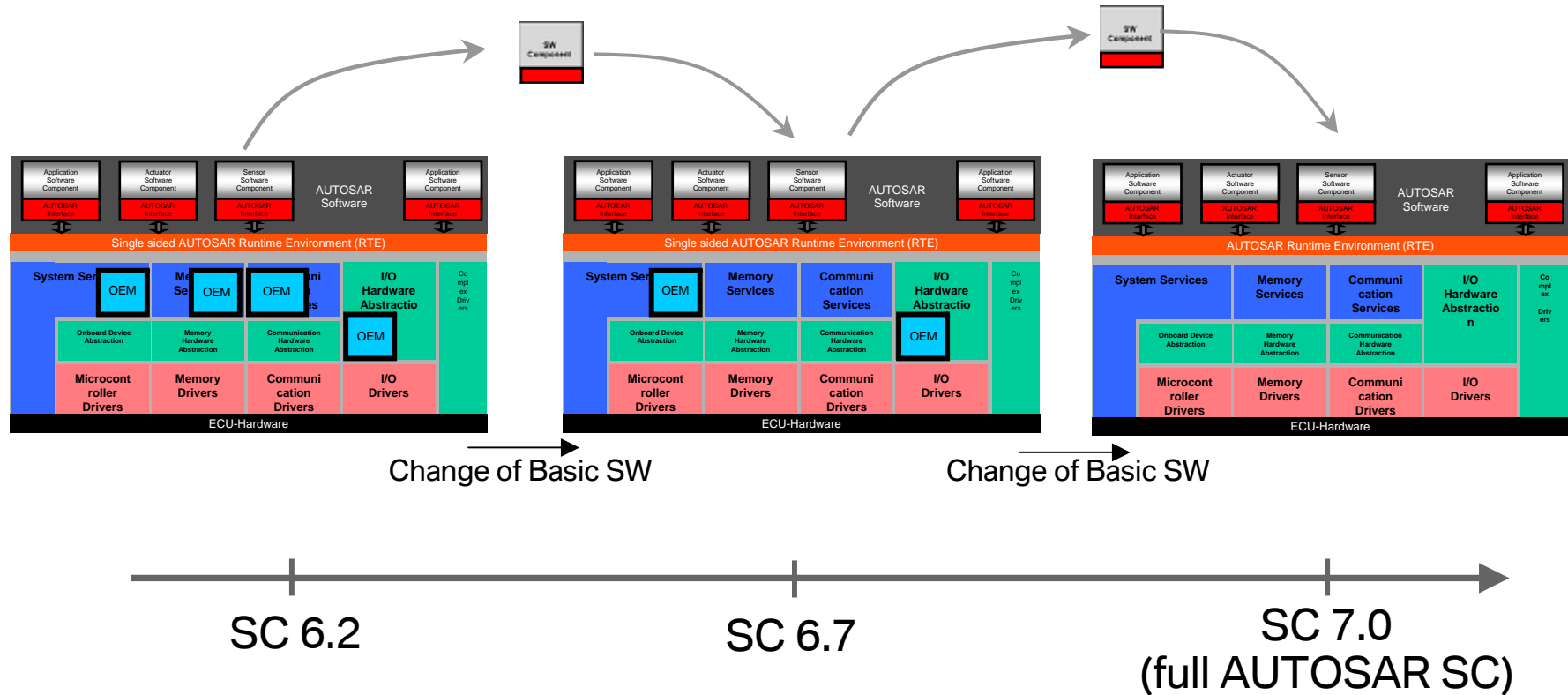
## A stable subset of the VFB for migration.



# AUTOSAR – Migration Strategy.

## Migration at SW-component level.

RTE based SW Components are migratable with an calculable amount of adaption.



**An application, coded against the RTE interface, can be migrated up to the fully compliant AUTOSAR standard core.**

**➔ „Stepwise Migration of Software Level**

# AUTOSAR – Migration Strategy. RTE against an existing COM Matrix.

**AUTOSAR Vision:**  
From the partitioning to the COM matrix.



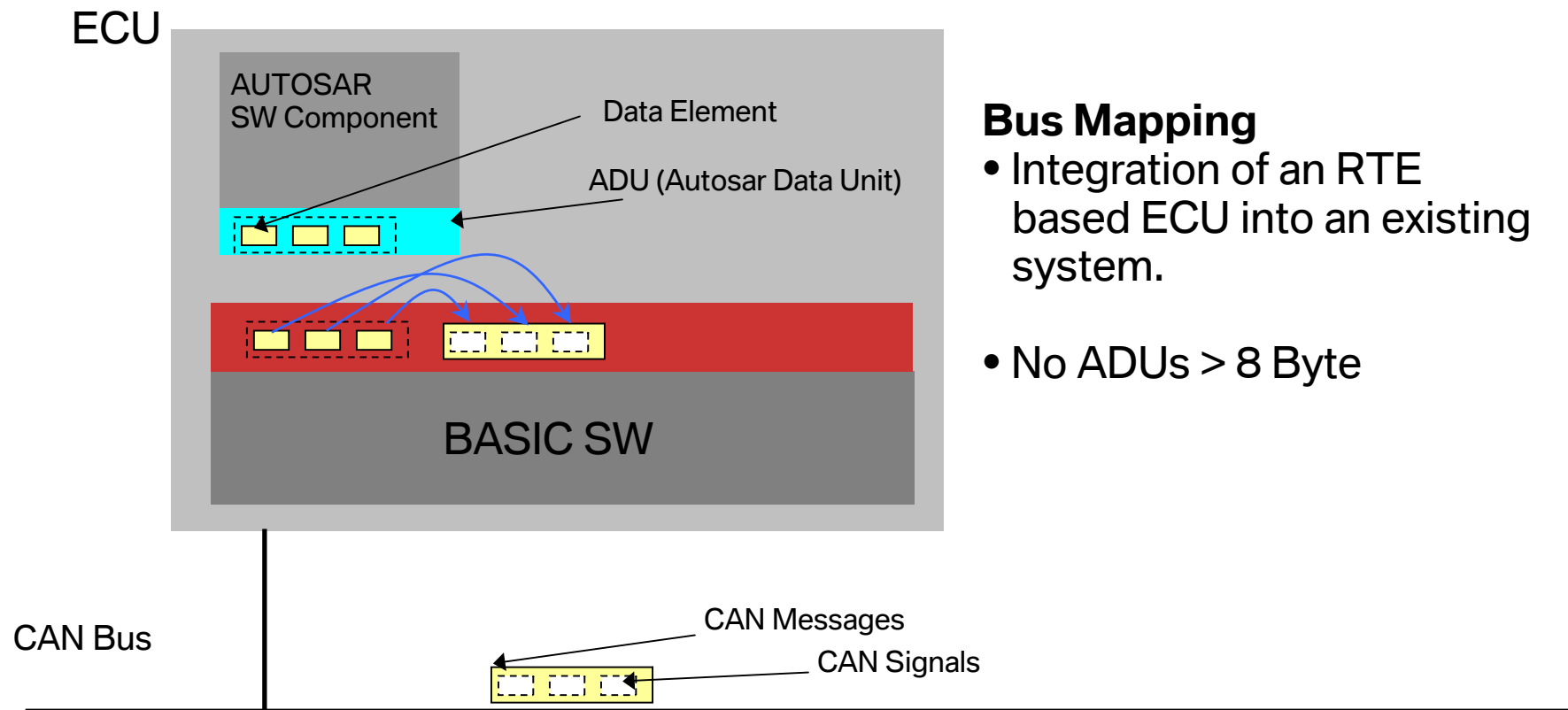
**Status Quo:**  
From the COM Matrix to the ECU interface



**Ergo:** „AUTOSAR brings up a new requirement for migration: generating an RTE against an existing COM matrix “

# AUTOSAR – Migration Strategy.

## Migration into an existing board network.

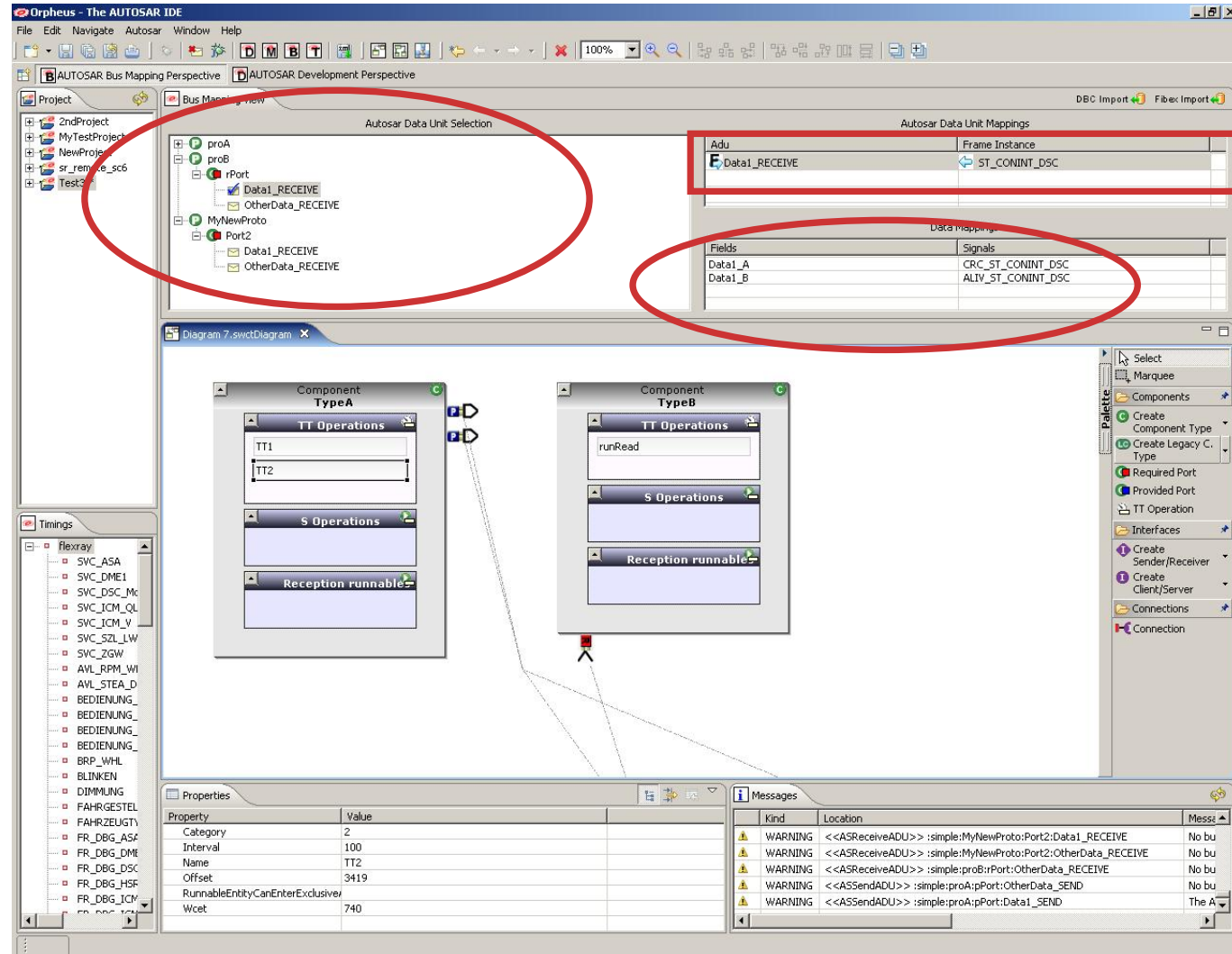


### Bus Mapping

- Integration of an RTE based ECU into an existing system.
- No ADUs > 8 Byte

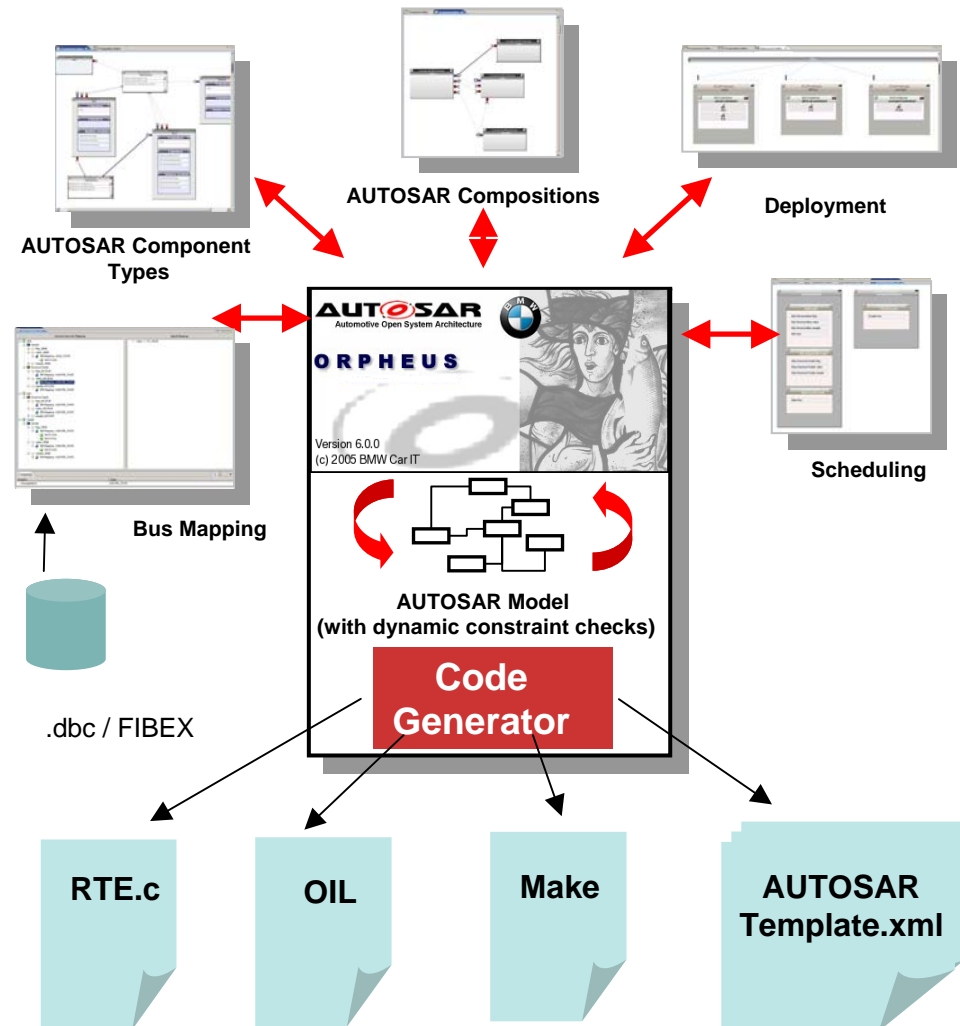
# AUTOSAR – Migration Strategy. Migration into a board net.

The RTE based ECU behaves towards the bus exactly like a „classical“ ECU



➔ „stepwise migration of ECU level

# AUTOSAR – Migration Strategy. ORPHEUS.



**ORPHEUS = modeling tools  
+ code generator**

- **Enabler for migration**  
Integrated in BMW SC6,  
Import DBC/FIBEX
- **Graphical Modeling of**
  - AUTOSAR Application Components
  - Mapping to CAN and Flexray Bus
  - Scheduling
  - Partitioning of Software
- **Optimized Codegeneration of RTE**  
(incl. autom. Unit Tests)
- **Open**  
(Adation to ASCET, AUTOSAR  
Templates)